



RESEARCH ACTIVITIES

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U.S. spends nearly \$1 billion on blood thinners for adults

Third-party payers and patients spent \$900 million in 2007 on adult outpatient prescriptions for anticoagulant drugs, more commonly known as blood thinners, according to the latest data from the Agency for Healthcare Research and Quality (AHRQ). Anticoagulants help prevent blood clots, which can cause serious medical problems such as strokes, heart attacks, or pulmonary embolisms. The last problem occurs when one or more arteries in the lungs become blocked, in most cases by blood clots that travel to the lungs from another part of the body.

The Federal agency found that 4.2 million Americans aged 18 and older used a blood thinner in 2007. The average expenditure and average out-of-pocket payment for a brand-name blood thinner were \$65 and \$29, respectively; generics were \$18 and \$7, respectively.

AHRQ also found that:

- About 10 percent of Americans aged 75 and older, and 6 percent of Americans between the ages of 65 and 74 used one or more blood thinners in 2007. In contrast, less than 1 percent of people younger than 65 used a blood thinner.
- About 74 percent of adults on blood thinners had a heart-related condition; 40 percent had

undergone surgery that year; and about 30 percent had cancer or diabetes.

- Of the nearly 28 million prescriptions for blood thinners filled by pharmacists, 19.3 million were for generic blood thinners and 8.5 million were for brand-name drugs.

These data were taken from the Medical Expenditure Panel Survey, a detailed source of information on the health services used by Americans, the frequency with which they are used, their cost, and how they are paid. For more information, view *Outpatient Prescription Anticoagulants Utilization and Expenditures for the U.S. Civilian Noninstitutionalized Population Age 18 and Older, 2007*, at www.meps.ahrq.gov/mepsweb/data_files/publications/st268/stat268.pdf.

AHRQ has produced a new DVD for clinicians and patients on how to use anticoagulant drugs safely and effectively, *Staying Healthy and Active with Blood Thinners*. To view the video, go to www.ahrq.gov/consumer/tpills.htm. To order the DVD, which may be played in English or Spanish, e-mail AHRQPubs@ahrq.hhs.gov or call 1-800-358-9295. ■

Health Care Costs and Financing

Medicare payment caps on home care add to the family caregiving burden, especially among lower-income families

Home care services, rapidly increasing with the aging population, are typically provided by formal home care agencies and the patient's own family and friends (informal care). To reduce home care costs, Medicare put into place an interim payment system for home care services in 1997 that placed annual patient caps on reimbursing home care agencies. Such caps force patients to expand their use of informal care, concludes a new study. While high-income families can offset this burden by paying for home care services out-of-pocket, low-income families must rely more on informal care to offset the limited reimbursed home care services available. Thus, the caregiving burden falls heaviest on lower-income families.

Researchers examined data on unmarried elderly persons from the Asset and Health Dynamics Among the Oldest-Old Survey (1993-2000) and the Health and Retirement Study (1996-2000). Each person had to have at least one limitation that interfered with their daily living activities, such as eating, bathing, and dressing.

Among low-income individuals, 58 percent reported using informal care over the prior month, averaging 15 hours per week. Only 48 percent of individuals above the Federal poverty line used informal care; their average was just 12 hours per week.

According to the researchers, a 62-percent decrease in home health services resulted in a 26-percent hike in the likelihood of informal care use plus a 38-percent rise in informal care hours. They caution policymakers to balance the financial costs of publicly funded home care or payment systems with the effect such changes may have on the informal care burden of lower-income families. Their study was supported in part by the Agency for Healthcare Research and Quality (HS17379).

See "Effect of Medicare home health care payment on informal care," by Ezra Golberstein, Ph.D., David C. Grabowski, Ph.D., Kenneth M. Langa, M.D., Ph.D., and Michael E. Chernew, Ph.D., in the Spring 2009 *Inquiry* 46, pp. 58-71. ■

Persons with mental disorders switching from Medicaid to Medicare drug coverage may have drug access problems

Low-income elderly persons and those with disabilities qualify to receive health insurance coverage from both Medicare and State-run Medicaid

programs. Called "dual eligibles," these individuals were required to transfer their prescription drug coverage from Medicaid to Medicare Part D drug plans in

2006. Today, dual eligibles represent 29 percent of Medicare Part D recipients. Agency for Healthcare Research and Quality

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Drug access problems

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(AHRQ) researcher Samuel H. Zuvekas, Ph.D., and colleagues investigated how these changes in drug coverage affected dual eligibles with mental disorders. Although this vulnerable population has experienced little change in out-of-pocket drug costs for psychiatric medications as a result of the coverage switch, potential access problems may be emerging.

The researchers used data from the Medical Expenditure Panel Survey in 2005 and 2006 to determine the distribution of expenditures by payer for antidepressants, antipsychotics, and anticonvulsants. In 2005, Medicaid covered 14 percent, 55 percent, and 33 percent of all drug spending for these categories, respectively. In 2006, when six million dual

eligibles switched to Medicare Part D, Medicaid's share of all drug spending was cut roughly in half for these psychotropic drug classes (8, 26, and 19 percent, respectively). In turn, Medicare's share of spending increased from 2 percent to 16 percent for antidepressants, 1 percent to 21 percent for antipsychotics, and 3 percent to 20 percent for all drugs from 2005 to 2006. By 2006, psychotropic medications became the second most costly drug category used by Medicare beneficiaries overall. They were also the most costly drugs among dual eligibles.

The researchers also noted that Medicare Part D drug plans are using more utilization management requirements to curb costs since 2006. They caution that prior authorization and step therapy

(where less costly drugs must be used first) may lead to medication access problems and even discontinuations for dual eligibles with mental disorders. Finally, these individuals may be adversely affected by prescription drug plans that have exited the market. Dual eligibles may be placed into new plans with different requirements that could affect access to and continuity of treatment.

More details are in "Dual eligibles with mental disorders and Medicare Part D: How are they faring?" by Dr. Zuvekas, Julie M. Donohue, Ph.D., and Haiden A. Huskamp, Ph.D., in the May/June 2009 *Health Affairs* 28(3), pp. 746-759. Reprints (AHRQ Publication No. 09-R062) are available from AHRQ.* ■

Patient Safety and Quality

Administration of antimicrobials just prior to surgery reduces the risk of surgical site infections

A study of surgical patients at 29 hospitals found that the risk of surgical site infections (SSIs) may be reduced when patients are given antimicrobials shortly before surgery. For antimicrobials with short infusion times, administration of the drug within 30 minutes before the surgical incision reduced the infection risk by a third when compared with administration at 31 to 60 minutes before the incision (1.6 percent versus 2.4 percent risk of infection). This study followed 4,472 surgical procedures and is one of the largest studies looking at the impact of antimicrobial timing and infection risk. The authors did not recommend changing the current national standard of administering most antimicrobials within 60 minutes prior to incision based on their findings alone.

For operations lasting more than 4 hours, re-dosing antimicrobials during surgery showed a statistically insignificant trend toward reduced risk of SSIs when the preoperative dose was given at the right time (1.8 percent SSIs), but did not lower infection risk when the timing of the presurgical dose timing was not optimal

(5.6 percent SSIs). The study also found that continuing antimicrobials after the completion of the operation did not have an impact on infection rates.

The hospitals that provided data were participants in a larger Trial to Reduce Antimicrobial Prophylaxis Errors. The 29 hospitals were asked to provide information on randomly selected patients who underwent cardiac surgery, hysterectomy, and surgical repair of hip and knee problems (arthroplasty). The researchers chose these types of surgery because antimicrobial prophylaxis guidelines were in place for these procedures at the beginning of the study. Infection control staff of the hospitals matched the surgical cases with their listing of previously identified SSIs. The research was funded in part by the Agency for Healthcare Research and Quality (HS11331).

More details are in "Timing of antimicrobial prophylaxis and the risk of surgical site infections," by James P. Steinberg, M.D., Barbara I. Braun, Ph.D., Walter C. Hellinger, M.D., and others in the July 2009 *Annals of Surgery* 250(1), pp. 10-16. ■

Simulating equipment failures can be useful to hone anesthesia providers' skills

If anesthesia equipment fails during an operation, the anesthesia provider is expected to fix it—before the failure creates a crisis. If the malfunction is not corrected rapidly, a patient could experience intraoperative oxygen deficiency, hypoventilation (reduced rate and depth of breathing), or awareness during surgery. In a recent study, a curriculum of simulated equipment-related failures was used to evaluate anesthesia residents' skills, identify individual residents' strengths and weaknesses, and detect gaps in training among the trainees. David J. Murray, M.D., from the Washington University School of Medicine, and colleagues gave 56

anesthesia residents 5 minutes to detect and correct equipment problems in eight scenarios. These included tasks the residents found easy, such as managing a blocked endotracheal tube, and tasks that challenged them, such as managing an overdose of inhaled anesthetic.

As expected, the 12 first-year residents did not perform as well as the 14 third- and 16 fourth-year residents. For example, more senior residents corrected the equipment failure more rapidly than junior residents. Thus, skill in managing equipment failures is obtained through training, the authors suggest.

Average scores were similar for the third- and fourth-year

residents, indicating that residents' skills are maintained but do not improve with more experience. The authors suggest that this stasis may be due to the absence of training opportunities and the infrequent occurrence of anesthesia equipment failures in the usual practice settings. This study was funded in part by the Agency for Healthcare Research and Quality (HS16652).

See "Management of anesthesia equipment failure: A simulation-based resident skill assessment," by William B. Waldrop, M.D., David J Murray, John R. Boulet, Ph.D., and Joseph F. Kras, D.D.S., M.D., in the August 2009 *Anesthesia and Analgesia* 109(2), pp. 426-433. ■

Failure to order and follow up medical tests are leading causes of diagnostic errors

The failure to order tests, report results to patients, and follow up with abnormal test findings are leading causes of diagnostic errors, according to a survey of U.S. primary care and specialist physicians. The 6-item survey was completed by nearly 300 physicians from 22 hospitals, who reported 583 cases of diagnostic error—the largest report ever published on diagnostic errors. Gordon Schiff, M.D., of Brigham and Women's Hospital Center for Patient Safety Research and Practice, and colleagues asked physicians to report three cases of diagnostic errors and to describe their perceived causes, seriousness, and frequency.

The most common missed or delayed diagnoses included pulmonary embolism, drug reactions or overdose, lung cancer, colorectal cancer, acute coronary syndrome (including heart attack), breast cancer, and stroke. Diagnostic errors occurred most often in the testing phase (failure to order, report, and follow up laboratory results, 44 percent), followed by clinician assessment errors (failure to consider and overweighing competing diagnoses, 32 percent; inadequate history taking, 10 percent; incomplete physical examination,

10 percent); and referral or consultation errors and delays, 3 percent.

Overall, 28 percent of the 583 diagnostic errors were rated as major, resulting in patient death, permanent disability, or a near-life-threatening event. Another 41 percent resulted in moderate adverse outcomes that caused the patient short-term illness, a prolonged hospital stay, an invasive procedure, or more intense care; 31 percent of diagnostic errors were minor or insignificant. The exact prevalence of diagnostic errors is unknown, and cannot be estimated from the voluntary reporting methodology used in this type of study. However, data from autopsies estimate that diagnostic errors occur in 10 to 15 percent of cases. The study was supported in part by the Agency for Healthcare Research and Quality (HS11552).

More details are in "Diagnostic error in medicine: Analysis of 583 physician-reported errors," by Dr. Schiff, Omar Hasan, M.D., Seijeoung Kim, R.N., Ph.D., and others in the November 9, 2009 issue of the *Archives of Internal Medicine* 169(20), pp. 1881-1887. ■

Medication changes are not always documented properly in physician notes or the electronic medical record

Physicians are accustomed to documenting patient care facts in their narrative notes, including medication changes. With the growth in electronic medical record (EMR) systems, however, more of this information is being entered into structured data fields. A new study finds that information on drug changes isn't always recorded in both places. Researchers looked at the documentation of medication intensification for high blood pressure in 5,634 patients with diabetes. Both physician notes (narrative) and EMR records (structured) were examined to see if physicians documented the start of a new antihypertensive medication or an increase in the dose of an existing medication.

A total of 18,185 medication changes were identified during the study period from 2000 to 2005. Physicians documented less than a third (30.9 percent) of these changes in both the narrative physician notes and the structured EMR data entry fields. However, the probability of a medication intensification being documented in both records increased 11 percent for each study year. This reflected the level of comfort

experienced by physicians as they became more acquainted with the EMR system.

Older physicians were less likely to document medication changes in both records, with the probability declining by 19 percent for each decade of provider age. The researchers also uncovered a relationship between documentation of medication intensification and improvement in blood pressure readings. An increase of one medication intensification per month documented in either narrative or structured formats was associated with a 5-8 mm Hg decrease in systolic and a 1.5-4 mm Hg decrease in diastolic blood pressure. The study was supported in part by the Agency for Healthcare Research and Quality (HS17030).

See "Comparison of information content of structured and narrative text data sources on the example of medication intensification," by Alexander Turchin, M.D., Maria Shubina, D.Sc., Eugene Breydo, Ph.D. and others, in the May/June 2009 *Journal of the American Medical Informatics Association* 16(3), pp. 362-370. ■

Criteria used to identify "drugs to avoid" in the elderly are not very accurate

A number of drugs are not considered appropriate for elderly patients due to their side effects, limited efficacy, or both. Lists of these drugs, called "drugs-to-avoid criteria," are used as markers of prescribing problems for elderly patients. In fact, versions of these criteria are required by the Centers for Medicare and Medicaid

Services for use in nursing homes. Yet these criteria are limited in their ability to identify inappropriate drugs, reveals a new study.

Researchers from the University of Iowa Center for Education and Research on Therapeutics (CERT) obtained information from medical records and patient interviews on 256 elderly outpatients taking at

least 5 different medications. Two versions of drugs-to-avoid criteria were used to determine which drugs being taken by participants were considered inappropriate. A separate team of a physician and a pharmacist interviewed each patient, reviewed their medical records, and provided an expert

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Visit the AHRQ Patient Safety Network Web Site

AHRQ's national Web site—the AHRQ Patient Safety Network, or AHRQ PSNet—continues to be a valuable gateway to resources for improving patient safety and preventing medical errors and is the first comprehensive effort to help health care providers, administrators, and consumers learn about all aspects of patient safety. The Web site includes summaries of tools and findings related to patient safety research, information on upcoming meetings and conferences, and annotated links to articles, books, and reports. Readers can customize the site around their unique interests and needs through the Web site's unique "My PSNet" feature. To visit the AHRQ PSNet Web site, go to psnet.ahrq.gov.

Drugs to avoid

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opinion as to which drugs they felt were inappropriate.

The 256 patients participating in the study were using a total of 3,678 medications. Based on their analysis, the physician/pharmacist team identified 563 drugs that were deemed problematic (15 percent). One version of the drugs-to-avoid criteria only identified 214 inappropriate drugs (6 percent). The second version had an even lower

success rate, identifying only 91 drugs (2.5 percent). The two criteria versions identified 61 percent and 49 percent of drugs, respectively, as being problematic, which were not judged as being inappropriate by the expert team.

According to the researchers, while the criteria are useful, they are not accurate enough to be used as the only method to determine the quality and appropriateness of prescription drugs in the elderly. The study was supported in part by a grant from the Agency for

Healthcare Research and Quality (HS16094) to the University of Iowa CERT. For more information on the CERTs program, visit www.certs.hhs.gov.

See "Agreement between drugs-to-avoid criteria and expert assessments of problematic prescribing," by Michael A. Steinman, M.D., Gary E. Rosenthal, M.D., C. Seth Landefeld, M.D., and others in the July 27, 2009 *Archives of Internal Medicine* 169(14), pp. 1326-1332. ■

Physicians in practices focused on quality improvement are less likely to be dissatisfied and stressed

Physicians who perceive problems with quality in their practices are more likely to be dissatisfied, feel isolated, and be stressed. On the other hand, physicians whose practices are actively engaged in quality improvement (QI) efforts are less likely to report such problems, reveals a new study. Researchers surveyed a random sample of 1,345 physicians in Massachusetts. All were mailed an 8-page survey that asked questions about demographics, the nature of their practice, their perceptions about care quality at their practice, and their engagement in QI activities.

Most of the physicians surveyed (85 percent) reported that QI activities were part of their practice. However, 33 percent indicated that their practices were experiencing problems with quality of care. Only 15 percent of physicians engaging in QI activities reported feeling isolated compared with 40 percent of physicians who did not engage in these activities. Those

physicians who admitted to having quality problems had greater levels of work-life stress than those who did not (34 vs. 24 percent).

These physicians were also more likely to be dissatisfied than physicians who reported fewer quality problems in their practice (31 vs. 19 percent). QI activities and evaluation, and having systems in place to prevent errors were all associated with lower levels of physician dissatisfaction. The study was supported in part by the Agency for Healthcare Research and Quality (HS15397).

See "The relationship between perceived practice quality and quality improvement activities and physician practice dissatisfaction, professional isolation, and work-life stress," by Mariah A. Quinn, M.D., Allison Wilcox, B.A., E. John Orav, Ph.D., and others in the August 2009 *Medical Care* 47(8), pp. 924-928. ■

Public Health Preparedness

Physicians aren't confident they can recognize infections from anthrax and other bioterrorism disease threats

Potential threats from biological terrorism underscore the need for frontline health care providers to quickly and accurately identify infection with biological agents such as smallpox and anthrax, which may be used in bioterrorism.

Yet physicians are not confident in their ability to recognize such bioterrorism threats, according to a recent survey. In 2004, researchers mailed surveys to all physicians who practiced in a three-hospital system in Connecticut that included a major medical center, children's

hospital, and community hospital. Those surveyed were asked about their confidence levels in recognizing six Category A bioterrorism agents recognized by the Centers for Disease Control and Prevention. The agents included

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Bioterrorism disease threats

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anthrax, botulism, smallpox, plague, tularemia (a bacterial infection common among wild rodents), and viral hemorrhagic fever (including the Ebola virus). Other questions on the survey were designed to assess physicians' education and training needs in bioterrorism preparedness, as well as their preferred training method.

Out of 820 responding physicians, 71 percent said they were "not confident" about recognizing 5 of the 6 infectious agents. Just under half (48.8 percent) felt comfortable identifying smallpox. Tularemia

was the infectious agent with the highest level of uncertainty for physicians. When faced with an unknown infectious disease, most (71 percent) would consult an infectious disease specialist for advice. The majority (72 percent) had a poor understanding of and familiarity with Connecticut's public health reporting requirements and procedures.

In terms of physician specialty, those with the most confidence were infectious disease and emergency medicine physicians. The majority of physicians surveyed (78 percent) preferred lectures and conferences for learning more about bioterrorism. Continuing medical education

programs that used interactive workshops were the least preferred method of delivery, despite research documenting this approach as one of the most effective methods for acquiring new skills and knowledge. The study was supported in part by the Agency for Healthcare Research and Quality (HS13693).

See "Critical challenges ahead in bioterrorism preparedness training for clinicians," by Kari A. Hartwig, Dr.P.H., M.A., David Burich, M.S.N., A.P.R.N.-B.C., Christopher Cannon, M.S.N., M.P.H., M.B.A., F.A.C.H.E., and others in the January/February 2009 *Prehospital and Disaster Medicine* 24(1), pp. 47-53. ■

Disparities/Minority Health

Black physicians are less likely to have implicit preferences for blacks or whites

Whether they are conscious or unconscious of it, health care providers—including physicians—have implicit attitudes about race. These attitudes may contribute to some of the health care disparities experienced by minority patients, suggests a new study. It examined implicit (nonconscious) attitudes about race in physicians. Doctors demonstrated an implicit preference for whites relative to blacks. However, black physicians did not appear to show an implicit preference for either blacks or whites. In addition, when it came to gender, women showed less implicit bias than men.

Researchers collected data from a large sample of 2,535 physicians who accessed Project Implicit, a demonstration Web site (implicit.harvard.edu). Those who visited the site took the Race Attitude Implicit Association Test, which asks users to quickly categorize facial images and value-laden words into pairs. The majority of physician test takers were white and less than half of the black physicians taking the test were male.

The implicit and explicit attitudes about race among the physicians reflected those of larger public samples. Overall, the majority of physicians held implicit preferences for whites over blacks. However, black physicians, on average, showed no implicit racial bias. This also parallels findings in large groups of blacks who took the test. Male physicians consistently showed stronger preferences for whites on both implicit and explicit measures. According to the researchers, the findings support efforts to increase minority representation in the medical professions. The study was supported in part by the Agency for Healthcare Research and Quality (HS15676).

See "Physicians' implicit and explicit attitudes about race by MD race, ethnicity, and gender," by Janice A. Sabin, Ph.D., M.S.W., Brian A. Nosek, Ph.D., Anthony G. Greenwald, Ph.D., and Frederick P. Rivara, M.D., M.P.H., in the August 2009 *Journal of Health Care for the Poor and Underserved* 20, pp. 896-913. ■

Most Mexican patients prefer their rheumatologist to make treatment decisions for them

When patients in the United States are surveyed about the role they want to play in their health care, most claim they want to actively participate. A new study finds that patients south of the U.S. border prefer to take a more passive approach in their care. Researchers surveyed 200 patients who were being treated in Guadalajara, Mexico, for rheumatoid arthritis, lupus, or other rheumatic diseases—all chronic conditions that require regular medical visits. The patients indicated a moderate level of trust in their doctors, giving them an

average score of 7 on a 10-point scale.

When surveyed before their appointments, 61 percent of patients said they wanted their doctor to take the lead in making decisions about their care. Only 39 percent of patients said they wanted to take an active role with their provider in making treatment decisions. Nevertheless, only 45 percent of this group perceived that they had played that role after the visit. The authors suggest that the Mexican patients with rheumatic conditions took traditional, passive roles because of cultural differences

in approaching authority figures like physicians.

The results contradict earlier studies that suggest that patients with chronic conditions often prefer to take active roles in their care. The study was funded in part by the Agency for Healthcare Research and Quality (HS16093).

See “Doctor-patient interactions in Mexican patients with rheumatic disease,” by Araceli Garcia-Gonzalez, M.D., D.Sc., Laura Gonzalez-Lopez, M.D., D.Sc., Jorge Ivan Gamez-Nava, M.D., D.Sc., and others in the April 2009 *Journal of Clinical Rheumatology*, 15(3), pp. 120-123. ■

Mental Health

Fewer public psychiatric hospital beds may lead to higher suicide rates

The process of deinstitutionalization has led to the massive transfer of severely mentally ill persons out of institutional care in favor of community treatment. From 1970 to 2000, public psychiatric hospital beds dropped from 207 to 21 beds per 100,000 persons. This reduction in public psychiatric beds may lead to increased suicide rates, concludes a study by Jangho Yoon, Ph.D., M.S.P.H., of Georgia South University, and Tim A. Bruckner, Ph.D., M.P.H., of the University of California at Irvine. They examined State-level variations in suicide rates in relation to psychiatric beds and U.S. community mental health spending from 1982 to 1998. They calculated that a decrease of 1 psychiatric bed per 100,000 people (approximately 1,818 beds nationwide) would result in 45 additional suicides per year.

The researchers also found that greater expenditures on community mental health could offset the effects of a reduction in public psychiatric beds on suicide rates. They estimated that once the per capita community spending was greater than \$107 (in 2008 dollars), a decrease in public beds no longer had a significant effect on suicide rates. In 2008, only two States, Pennsylvania (\$120) and Vermont (\$109), had per capita community expenditures above \$107. States that

have mental health parity laws (i.e., laws requiring that health insurance policies give equal coverage for mental and physical health conditions) had lower suicide rates. Higher unemployment rates and a greater proportion of residents aged 55-64 correlated with higher suicide rates. The substitution of private beds for public beds did not affect suicide rates.

Deinstitutionalization and the concomitant drop in public psychiatric hospital beds may jeopardize care for poor, severely mentally ill patients who need treatment but lack the resources to pay for it, note the researchers. They believe that deinstitutionalization has been implemented without sufficient evaluation of possible health risks. Their findings were based on State-level data from various sources for the years 1982-1998 for 50 U.S. States and the District of Columbia. These sources included the National Center for Health Statistics Compressed Mortality File and the American Hospital Association Annual Survey of Hospitals. The study was supported in part by the Agency for Healthcare Research and Quality (T32 HS00086).

See “Does deinstitutionalization increase suicide?” by Drs. Yoon and Bruckner in the August 2009 *HSR: Health Services Research*, 44(4), pp. 1385-1405. ■

Antidepressant use rises while psychotherapy declines

From 1996 to 2005, the annual rate of antidepressant treatment for U.S. individuals 6 and older rose from 6 percent to 10 percent, while the number being treated increased from 13.3 million to 27 million. This trend made antidepressants the most widely prescribed class of medications in office-based and hospital outpatient-based medical practice, according to Mark Olfson, M.D., M.P.H., of Columbia University, and Steven C. Marcus, Ph.D., of the University of Pennsylvania. Their study of national trends in antidepressant use was based on data from the Agency for Healthcare Research and Quality's (AHRQ's) Medical Expenditure Panel Surveys conducted in 1996 and 2005.

During this period, the percentage of those being treated with antidepressants who were also receiving psychotherapy declined from 32 to 20 percent. Among

persons treated with antidepressants, use of newer selective serotonin reuptake inhibitors became increasingly common and use of the older tricyclic antidepressants became less common. A growing percentage of antidepressant users were treated with antipsychotic medications (from 5.4 percent in 1996 to 8.9 percent in 2005), while a declining percentage received inpatient treatment or psychotherapy for a mental disorder.

These trends vividly illustrate the extent to which antidepressant treatment has gained acceptance in the United States and the growing emphasis on pharmacologic rather than psychologic aspects of care, note the researchers. They suggest that the declining use of psychotherapy may be due to financial factors, such as out-of-pocket costs to patients and comparatively low insurance

coverage for psychotherapy. Another possible factor is patient perception of the greater effectiveness of antidepressants than psychotherapy.

Use of antidepressants among blacks and Hispanics in 2005 was less than half the rate of whites. Blacks were the only group who did not experience a significant increase in antidepressant treatment. These differences have been thought to be related to racial/ethnic variation in access to mental health services, educational factors, trust of mental health services, and treatment acceptability. This study was supported by AHRQ (HS16097).

See "National patterns in antidepressant medication treatment," by Drs. Olfson and Marcus in the August 2009 *Archives of General Psychiatry*, 66(8), pp. 848-856. ■

Youths initially diagnosed with ADHD receive an array of medications

Among children and adolescents newly diagnosed with attention-deficit/hyperactivity disorder (ADHD), youths who were male, school-aged, white, living in rural areas, or under foster care were more likely to be treated with ADHD drugs (stimulants). In addition to these sociodemographic factors, provider specialty (primary care, psychiatry, neurology, other specialty) also influenced treatment, according to a team of researchers from the University of Florida and Rutgers University. Children diagnosed by psychiatrists were 42 percent less likely to receive ADHD drugs. However, they were more likely to

receive other psychotropics than children diagnosed by primary care physicians, even after adjusting for other coexisting mental disorders.

Of the 26 percent of youths with both ADHD and other mental disorders, such as depression or bipolar disorder, close to a third used non-ADHD psychotropic medications. These patients were between 14 and 56 percent less likely to receive ADHD medications. The researchers also discovered that more than 25 percent of patients without other mental disorders received off-label psychotropic medications in their initial ADHD

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Note: Only items marked with a single (*) asterisk are available from the AHRQ Clearinghouse. Items with a double asterisk (**) are available from the National Technical Information Service. See the back cover of *Research Activities* for ordering information. Consult a reference librarian for information on obtaining copies of articles not marked with an asterisk.

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drug regimen. Antidepressants were the most common nonstimulant off-label drug class prescribed, along with atypical antipsychotics and anticonvulsants.

The study included 28,763 youths between the ages of 6 and 18 who were enrolled for at least 18 months in the Florida Medicaid fee-for-service program between 1994 and 2004. Because of the large size of the study sample, the researchers were able to examine psychotropic drug treatment in some less common coexisting mental disorders and also patterns of use among minority youth. For example, the researchers found that, contrary to previous research, Hispanics,

not blacks, were the minority group least likely to receive drug treatment. The researchers call for more studies on psychotropic safety and efficacy, given the high prevalence of coexisting mental disorders, multidrug regimens, and off-label drug use among youth with ADHD. This study was supported by the Agency for Healthcare Research and Quality (HS16097).

See “Determinants of initial pharmacological treatment for youths with attention-deficit/hyperactivity disorder,” by Chih-Ying Chen, M.H.A., Tobias Gerhard, Ph.D., and Almut G. Winterstein, Ph.D., in the *Journal of Child and Adolescent Psychopharmacology* 2009, 19(2), pp. 187-195. ■

Elderly/Long-Term Care

Antibiotic resistance is prevalent and varied in long-term-care facilities

Patients in long-term-care facilities are often frail and suffer from a variety of health problems. They are at increased risk for infection from various bacteria, which can often be resistant to antibiotics. In fact, a new study found a marked prevalence of resistance to multiple antibiotics among a number of bacterial organisms present in long-term-care residents.

Researchers at the Center for Education and Research on Therapeutics (CERT) at the University of Pennsylvania School of Medicine studied 63 long-term-care facilities in New Jersey, Pennsylvania, and Delaware. They reviewed all clinical urine samples obtained from residents during a 10-month period. They reviewed antibiotic susceptibility data for all organisms isolated.

The three organisms most commonly isolated in the urine samples were *Escherichia coli*, *Klebsiella* species, and *Proteus mirabilis*. A little over half (51 percent) of the *E. coli* isolates and 29 percent of *Klebsiella* species were found to be resistant to levofloxacin, a member of the fluoroquinolone class of antibiotics frequently used to treat infections. Just over a quarter (26 percent) of *Klebsiella* species and 12 percent of *E. coli* isolates were resistant to ceftazidime. Six percent of *Klebsiella* species were resistant to imipenem.

The researchers also found differences in antibiotic resistance rates across the long-term-care facilities. Resistance rates for several antibiotics were lowest for facilities with fewer than 100 beds. Higher rates of resistance were found in facilities with 100 to 150 beds. Different patterns of

resistance were also noted for various geographic regions where these long-term-care facilities resided. The study was supported in part by a grant from the Agency for Healthcare Research and Quality (HS10399) to the University of Pennsylvania School of Medicine CERT. For more information on the CERTs program, visit www.certs.hhs.gov.

See “Epidemiology of antimicrobial resistance among gram-negative organisms recovered from patients in a multistate network of long-term care facilities,” by Ebbing Lautenbach, M.D., M.P.H., M.S.C.E., Roseann Marsicano, B.S., Pam Tolomeo, M.P.H., and others in the August 2009 *Infection Control and Hospital Epidemiology* 30(8), pp. 790-793. ■

Computerized decisionmaking systems improve physician prescribing for long-term-care residents

Patients living in long-term-care facilities often have compromised kidney function. Since their kidneys cannot process medications properly, these individuals are at increased risk for adverse drug events. Using computer systems to calculate appropriate dosing of medications can improve physician drug prescribing for these patients, concludes a new study.

The researchers randomly assigned 22 long-stay units so that prescribing physicians would receive alerts (intervention units) or not receive alerts (control units) provided by a computerized clinical decision support system with prescriber order entry. Researchers could track alerts in the control units, but the alerts were hidden from the physicians. Alerts related to recommended drug doses and frequencies, as well as when to avoid using a particular drug for residents with renal insufficiency. Physicians were also prompted to order serum creatinine tests (that determine kidney function) when this information was not readily available. The researchers compared the proportion of appropriate final drug orders in both the intervention and control units.

The rates of alerts were nearly equal at 2.5 per 1,000 resident days in the intervention units and 2.4 in the

control units. The proportion of dose alerts for which the final drug orders included an appropriate dose were similar between the intervention and control units. However, significantly higher proportions of final drug orders were appropriate in the intervention units for the remaining alert categories. For example, intervention units were 2.4 times more likely to have final drug orders calling for medication administration at an appropriate frequency, 2.6 times more likely to have final orders that omitted drugs that should be avoided, and 1.8 times more likely to order creatinine tests when this information was missing. Overall, final drug orders were appropriate 20 percent more often in the intervention units. Drugs that triggered alerts most often were levofloxacin, nitrofurantoin, cephalexin, metformin, gabapentin, and glyburide. The study was supported in part by the Agency for Healthcare Research and Quality (HS10481 and HS15430).

See "Computerized clinical decision support during medication ordering for long-term care residents with renal insufficiency," by Terry S. Field, D.Sc., Paula Rochon, M.D., M.P.H., Monica Lee, R.Ph., and others, in the July/August 2009 *Journal of the American Medical Informatics Association* 16(4), pp. 480-485. ■

Health Information Technology

Primary care physicians like e-prescribing systems, but make little use of their advanced features

Electronic prescribing (e-prescribing) systems are one type of health information technology that can improve the quality and safety of prescribing medications to patients. However, realizing its greatest potential requires that physicians use more advanced features, such as drug interaction alerts and medication selection support. Primary care physicians appear to understand the patient safety benefits of these systems. However, they do not always realize the benefits of using advanced features, such as patient medication history and drug

formulary and coverage information, which could help them select more appropriate lower-cost drugs.

That's the conclusion of a study of 228 primary care physicians, who completed surveys to assess their perceptions about the benefits of e-prescribing systems. A total of 139 physicians were already using e-prescribing systems in the office, while the others were awaiting its installation. E-prescribers were asked to share their experiences with using the system, its impact on job performance, and the amount of e-prescriptions they produced.

Overall, most of the e-prescribers reported positive experiences with their systems. The technology gave them better information to reduce drug interactions and reduced inefficiencies involving pharmacy telephone calls about safety issues. They also felt their system was easy to use, improved quality of care, and made their work easier. Despite these favorable impressions, however, 17 percent of e-prescribing physicians had stopped using their systems. Quitting was associated with perceptions of poor

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E-prescribing

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usability. For example, only 37 percent of users knew how to access the system's medication history information. Also, many found the drug coverage information incomplete at least 20

percent of the time. Nearly half (46 percent) admitted to handwriting prescriptions on some occasions. The study was supported in part by the Agency for Healthcare Research and Quality (HS16391).

See "Perceptions of standards-based electronic prescribing

systems as implemented in outpatient primary care: A physician survey," by C. Jason Wang, M.D., Ph.D., Mihir H. Patel, Pharm.D., Anthony J. Schueth, M.S., and others, in the July/August 2009 *Journal of the American Medical Informatics Association* 16(4), pp. 493-502. ■

Use of electronic prescribing has expanded among Massachusetts physicians

Massachusetts physicians substantially boosted their use of electronic health records (EHRs) in 2007 compared with 2005, according to a new study. By 2007, more than one-third of practices in the State had EHRs. These findings come from a 2005 survey of 1,144 physicians practicing in Massachusetts and a followup 2007 survey of nearly 80 percent of those physicians.

Both surveys asked doctors about their adoption of EHRs and assessed their use of 10 key features of these systems. The features included basic and advanced clinical functions such as laboratory and radiology order entry and test result viewing; visit notes, medication lists, and problem lists; clinical decision support; and the ability to transmit prescriptions to pharmacies electronically (e-prescribing).

In 2005, only 23 percent of practices had EHRs, compared with 35 percent in 2007. Practices with the greatest adoption of EHRs were those with seven or more physicians (71.4 percent). Little change was found over time, however, in the availability of 9 of the 10 key EHR functions. For example, only half the physicians reported in 2005 and 2007 that their systems allowed for laboratory or radiology order entry.

In addition, no more physicians reported being able to use clinical decision support tools in 2007 than in 2005. However, the ability of physicians to transmit prescriptions to pharmacies electronically increased significantly during the study period. In 2005, 45 percent of physicians surveyed were able to e-prescribe compared with 71 percent of physicians in 2007. Some of the EHR features are likely to be included in the anticipated "meaningful use criteria" being developed under the auspices of the Office of the National Coordinator for Health Information Technology, note Steven Simon, M.D., M.P.H., of Harvard Medical School, and colleagues. Their study was supported in part by the Agency for Healthcare Research and Quality (HS15397).

See "Physicians' use of key functions in electronic health records from 2005 to 2007: A statewide survey," by Dr. Simon, M.D., M.P.H., Christine S. Soran, Rainu Kaushal, M.D., M.P.H., and others, in the July/August 2009 *Journal of the American Medical Informatics Association* 16(4), pp. 465-470. ■

Web-based programs help patients with diabetes feel empowered to take care of themselves

Patients with diabetes who use Web-based case management programs score better on measures of psychosocial self-efficacy and empowerment compared with those without access to these programs. This may help them engage in more effective self-care behaviors such as diet, exercise, and blood-glucose

monitoring that can reduce the risk of diabetic complications, note the authors of a pilot study. They looked at the effectiveness of a Web-based disease management program using five different Web sites.

For a period of 12 months, adults with moderately or poorly controlled type 1 diabetes who took

daily insulin shots were randomized to one of two interventions. Those in the control group received usual care from their team at the diabetes care center. Patients randomized to the disease management program continued to receive usual care combined with access to a nurse case manager. They also could use

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Web-based programs

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four Web sites that allowed them to access their medical record, upload blood-glucose readings, create a daily diary of activities, and generate care-action plans. A fifth Web site provided participants with a variety of educational information.

Nearly two-thirds (65.9 percent) of patients in the intervention group completed at least one blood-glucose reading. The majority of patients (61 percent) also accessed

their electronic medical record via the Web from home. The intervention group had significantly higher scores than the control group on the Diabetes Empowerment Scale. This most often translates into better self-care behavior. There was no effect of the Web-based case management on A1c blood levels (a marker of diabetes control) between the two groups. The researchers point out, however, that less than one-fourth of the intervention group used the Web resources consistently.

They call for larger studies to clarify the impact of the intervention on patient outcomes. The study was supported in part by the Agency for Healthcare Research and Quality (HS13853).

See “Web-based collaborative care for type 1 diabetes: A pilot randomized trial,” by Kelly P. McCarrier, Ph.D., M.P.H., James D. Ralston, M.D., M.P.H., Irl B. Hirsch, M.D., and others, in the 2009 *Diabetes Technology & Therapeutics* 11(4), pp. 211-217. ■

Longer use of electronic health records is not linked to improved quality of care

Longer use of electronic health records (EHRs) does not necessarily translate into better quality of care, according to a new study. It found no link between the duration of EHR usage and clinical performance quality measures. Researchers analyzed data from two sources. The first was a statewide survey of the adoption and use of EHRs among physicians. The authors also analyzed claims data to determine the level of quality of care according to physician performance on six quality measures: asthma care, diabetes care, cancer screening, mental health, women's health, and well child/adolescent visits.

Between 2000 and 2005, the percent of physicians who reported adopting EHRs and having core functions available in those systems more than doubled. They used these EHR systems an average of 4.8 years. There was no difference in quality

performance between users and nonusers of EHRs for each of the six quality measures. In addition, there was no consistent pattern relating the adoption of EHRs to physicians' performance on the quality measures over time. What's more, there was no evidence that quality of care improved with increasing duration of EHR usage. Intensifying the use of key EHR features, such as clinical decision support, may be needed to realize quality improvement from EHRs, conclude the researchers. Their study was supported in part by the Agency for Healthcare Research and Quality (HS15397).

See “The relationship between electronic health record use and quality of care over time,” by Li Zhou, B.Med., Ph.D., Christine S. Soran, Chelsea A. Jenter, M.P.H., and others in the July/August 2009 *Journal of the American Medical Informatics Association* 16(4), pp. 457-464. ■

Outcomes/Effectiveness Research

Studies examine impact of drug caps and pay for performance on care costs and outcomes

A number of innovative methods have been used to curb elderly health care costs and improve care quality at the State and Medicare levels. To reduce costs, some State pharmacy assistance plans incorporate a

spending cap to offset prescription drug costs. One of these is called a soft cap. This requires enrollees to pay higher copayments after they incur total spending that is more than a designated amount. Medicare uses their Premier

Hospital Quality Incentive Demonstration (PHQID) to provide pay-for-performance incentives to hospitals to improve care quality and reduce costs.

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Health care costs

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Two new studies illustrate how these programs are working. The first study found that once spending caps were reached, elderly patients reduced the number of drugs they purchased. In the second study, the PHQID, often cited as a model for other pay-for-performance programs, had little effect on mortality and care costs for patients diagnosed with one of four conditions. Both studies, supported in part by the Agency for Healthcare Research and Quality (T32 HS00062), are summarized here.

Bishop, C. E., Ryan, A. M., Gilden, D. M., and others, (2009, June). “Effect of an expenditure cap on low-income seniors’ drug use and spending in a state pharmacy assistance program.” *HSR: Health Services Research* 44(3), pp. 1010-1028.

In this study, researchers looked at claims and enrollment files from a State senior pharmacy assistance program in Illinois. The program enrolled non-Medicaid-eligible seniors who had incomes of less than 200 percent of the Federal poverty level. Once prescription

drug costs exceeded \$1,750, the patient’s copays increased by 20 percent.

Once enrollees exceeded their prescription drug caps, they reduced the number of drugs purchased by 14 percent. The use of generic prescription drugs increased by 4 percent after the cap was reached. Seniors’ monthly drug expenses also dropped by 19 percent. Near-poor elders were most likely to be affected by reaching the cap. Prior to the cap, the out-of-pocket price was estimated at \$2.82 per prescription. This increased to \$13.04 after the cap was met, more than a threefold price increase. Based on a monthly income of \$1,100, the monthly out-of-pocket expense for the average precap prescriptions would increase from 1.5 to 6.4 percent. The researchers conclude that the impact of the cap on low-income elders’ health is likely to be substantial.

Ryan, A. M. (2009, June). “Effects of the Premier Hospital Quality Incentive Demonstration on Medicare patient mortality and cost.” *HSR: Health Services Research* 44(3), pp. 821-842.

Researchers used Medicare inpatient claims and other data

from 2000 to 2006 to identify more than 6.7 million patients with more than 11.2 million hospital admissions. Diagnoses were heart attack, heart failure, pneumonia, and coronary artery bypass graft surgery (CABG). The PHQID pays a 2 percent bonus on Medicare reimbursement rates to hospitals performing in the top 10 percent of performance of a composite quality measure for each of these four clinical conditions. The researchers examined the effects of PHQID on mortality (after adjusting for the patient’s risk of dying) and cost.

They found no evidence that PHQID had any significant effect on 30-day mortality or 60-day costs for heart attack, heart failure, pneumonia, or CABG. The researchers conclude that the PHQID made little impact on the value of Medicare-paid inpatient care. They suggest that, by primarily using care process measures of quality, the PHQID may not have been sufficiently targeted to decrease mortality. Also, the magnitude of the financial incentives in the PHQID may have been insufficient to defray the high cost of improving patient outcomes. ■

MEPS household survey respondents tend to report some medical conditions more accurately than others

Household reports on medical conditions of household members, derived from the Medical Expenditure Panel Survey (MEPS) of the Agency for Healthcare Research and Quality (AHRQ), tend to be more accurate for certain types of conditions than others, concludes a study by AHRQ researchers. The MEPS is a national annual survey of approximately 15,000 households and a sample of the medical providers from whom they receive care. Steven Machlin, M.S., and colleagues recently analyzed MEPS data from 2002 to 2005 to determine the sensitivity and accuracy of household reporting of medical conditions.

The analysis is based on household-reported condition information matched to provider-reported condition information classified into 1 or more of 23 broad condition categories. Overall, household reports were more accurate for conditions that were highly salient, caused pain, required hospitalization and/or ongoing treatment, had specific recognizable treatment, altered lifestyle, and/or affected daily life. Among the 23 condition categories examined, reporting sensitivity rates ranged from 93.8 percent to 37.4 percent, with a median of 70 percent.

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MEPS survey

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Ten of the 23 condition categories had rates of 75 percent or higher. With the exception of three conditions, all categories had sensitivity rates of 60 percent or above. Both pregnancy/delivery and diabetes had the highest reporting sensitivity rates of more than 90 percent. Other conditions with rates between 82 and 88 percent were mental health/substance abuse disorders, thyroid conditions, and hypertension. The three condition categories with the lowest rates of reporting were cerebrovascular disease, osteoporosis, and anemia. Only one-third of persons with actual anemia were identified by survey respondents in the household as having the condition. Reporting was generally more accurate when conditions were

classified into broader categories, such as heart disease versus coronary artery disease. In some instances, respondents used general terms, such as “back disorders,” for conditions that clinicians identified with more specific terminology, such as osteoporosis. Therefore, the researchers urge caution when considering using MEPS household data to analyze conditions that are defined at an extremely detailed level and/or that may be underreported (e.g., anemia).

More details are in “Sensitivity of household reported medical conditions in the Medical Expenditure Panel Survey,” by Mr. Machlin, Joel Cohen, Ph.D., Ann Elixhauser, Ph.D., Karen Beauregard, M.S., and Claudia Steiner, M.D., M.P.H., in the June 2009 *Medical Care* 47(6), pp. 618-625. Reprints (AHRQ Publication No. 09-R073) are available from AHRQ.* ■

MEPS respondents underreport emergency department and office visits, but accurately report hospital stays

People underreport certain types of health care use when responding to the Medical Expenditure Panel Survey (MEPS) of the Agency for Healthcare Research and Quality (AHRQ), reveals a new study. MEPS collects data from U.S. households on their use of hospital and office-based services, prescription drugs, and other health-related services. AHRQ researchers Samuel H. Zuvekas, Ph.D., and Gary L. Olin, Ph.D. (retired), identified Medicare-insured individuals who participated in the MEPS during 2001 to 2003. Each individual was matched to their Medicare

enrollment and claims data. This allowed the researchers to compare household-reported information with actual services delivered and outlined in claims to Medicare.

Overall, households accurately reported any hospital stays during the time period, as well as specifying the number of nights spent in the hospital. Reporting was less accurate, however, when it came to information on emergency department (ED) and office visits. ED visits were underreported by one-third and office visits by 19 percent on average. Underreporting varied by income, education, health status, and race/ethnicity. However,

most of this variation was small relative to the overall gaps in reporting. That is, underreporting affected all groups, so that relative comparisons between groups are largely unaffected in most empirical analyses using the MEPS.

More details are in “Validating household reports of health care use in the Medical Expenditure Panel Survey,” by Drs. Zuvekas and Olin, in the October 2009 *HSR: Health Services Research* 44(5), pp. 1679-1700. Reprints (AHRQ Publication No. 09-R083) are available from AHRQ.* ■

Individuals who seek care for coughs and colds in emergency departments have social support

Individuals who seek care in emergency departments (EDs) for nagging coughs and colds have strong support from family and friends, a new study finds. Researchers surveyed 704 English- and Spanish-speaking patients seen in 15 EDs for coughs lasting less than 3 weeks. They found that participants scored an average of 5.54 on the 7-point Multidimensional Scale of Perceived Social Support, which measures support from relationships with family, friends, and special persons. Participants in this study with the

highest scores for social support tended to be women, have children younger than 5 years old, have higher income levels, and rate their health status as good to excellent.

Because individuals with robust social support seem more likely to take care of their health, the authors expected to find that patients who sought care for coughs and colds in EDs would have low scores for social support. They suggest that factors such as

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Emergency departments

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symptom severity or lack of access to primary care physicians may be more at play with these ED patients than support from family and friends.

Future research in this area could explore whether individuals who forego care for coughs and colds have low social support, or it could compare the social support of individuals who are seen in the ED versus

the doctor's office or a drop-in cold clinic, the authors suggest. This study was funded in part by the Agency for Healthcare Research and Quality (HS13915).

See "Perceived social support among adults seeking care for acute respiratory tract infections in U.S. EDs," by Sara K. Levin, B.A., Joshua P. Metlay, M.D., Ph.D., Judith H. Maselli, M.S.P.H., and others in the June 2009 issue of *The American Journal of Emergency Medicine* 27(5), pp. 582-587. ■

Agency News and Notes

Two-thirds of people with diabetes miss some critically important exams to manage the disease

Only a third of the 16.5 million Americans who reported that they had diabetes in 2007 had all three exams considered critical for managing their disease and preventing complications, according to the latest data from the Agency for Healthcare Research and Quality (AHRQ). Agency researchers looked at how frequently adults with diabetes had a health professional check their blood-sugar levels, examine their eyes for diabetes-related damage, or evaluate their feet for poor circulation typical of the illness.

According to the analysis:

- Just 58 percent reported having had one or two of the exams, 3 percent had no exams, and 6 percent said they didn't know if they had any of these tests.
- Privately insured adults aged 18 to 64 were twice as likely as adults who were uninsured to have all three tests (36 percent vs. 18 percent).

- About 40 percent of elderly adults with diabetes, who had Medicare plus a secondary private insurance plan, had all three tests compared with 31.5 percent of those with Medicare only.
- One-third of blacks with diabetes reported using insulin compared with 22.5 percent of whites and 21 percent of Hispanics. In contrast, Hispanics were more likely to take pills to control their diabetes compared with whites and blacks (84 percent vs. 77 percent).

These data were taken from AHRQ's Medical Expenditure Panel Survey (MEPS), a detailed source of information on the health services used by Americans, the frequency with which they are used, their cost, and how they are paid. For more information, view *Diabetes Management: Tests and Treatment among the Adult U.S. Civilian, Population, 2007*

(www.meps.ahrq.gov/mepsweb/data_files/publications/st269/stat269.pdf).

AHRQ has a free, illustrated guide to help people with Type II diabetes who take oral medications compare their options for treatment based on medication benefits and risks. Another guide helps people who use insulin learn about their options and the differences between premixed and other types of insulin. To view these and other consumer guides based on the results of AHRQ's comparative effectiveness research, go to effectivehealthcare.ahrq.gov/index.cfm/guides-for-patients-and-consumers. ■

Announcements

HHS Secretary appoints members to AHRQ National Advisory Council

Department of Health and Human Services (HHS) Secretary Kathleen Sebelius has appointed seven new members to the National Advisory Council for the Agency for Healthcare Research and Quality (AHRQ). The Council provides advice and recommendations to the Secretary and the Director of AHRQ on priorities for a national health services research agenda. The Council consists of 21 members from the private sector and 7 ex-officio members from other Federal health agencies.

The seven new council members are:

- Nancy E. Donaldson, D.N.Sc., R.N., Director, Center for Research and Innovation in Patient Care, School of Nursing, University of California, San Francisco
- Arthur Garson, Jr., M.D., M.P.H., Executive Vice President and Provost and the Robert C. Taylor Professor of Science and Public Policy, University of Virginia, Charlottesville
- Junius J. Gonzales, M.D., M.B.A., Dean and Professor, College of Behavioral and Community

Services, University of South Florida, and Executive Director, Louis de la Parte Florida Mental Health Institute, Tampa

- Lisa M. Latts, M.D., M.B.A., M.S.P.H., Vice President, Programs in Clinical Excellence, WellPoint Inc., Denver
- Keith J. Mueller, Ph.D., Director, Center for Rural Health Policy Analysis and Nebraska Center for Rural Health Research, and Associate Dean, College of Public Health, Nebraska Medical Center, Omaha
- Xavier Sevilla, M.D., Chief of Pediatrics, Manatee County Rural Health Services Inc., Whole Child Pediatrics, Bradenton, Fla.
- Bruce Siegel, M.D., M.P.H., Director, Center for Health Care Quality, The George Washington University School of Public Health and Health Services, Washington, D.C.

To learn more about the Council, go to www.ahrq.gov/about/council.htm. ■

Research Briefs

Alexander, G. and Staggars, N. (2009). "A systematic review of the designs of clinical technology. Findings and recommendations for future research." (AHRQ grant HS16862). *Advances in Nursing Science* 32(3), pp. 252-279.

Human factors studies have become more important as technology diffuses into clinical settings. These authors used human factors concepts—effectiveness, efficiency, and satisfaction—to review studies on the design of clinical technology. They identified 50 studies with an emphasis on nursing that met their relevance criteria. The majority of the studies evaluated the effectiveness of clinical technology interfaces, while

studies about interface efficiency were fewest in number. The authors recommend more examinations that include unstudied nursing specialties to provide detailed accounts of experiences with clinical technology. They also support expanding the types, settings, and participants for usability testing, developing integrated displays, and expanding outcome variables in usability studies.

Ancker, J.S., Chan, C., and Kukafka, R. (2009). "Interactive graphics for expressing health risks: Development and qualitative evaluation." (AHRQ grant HS16333). *Journal of*

***Health Communications* 14, pp. 461-475.**

Communicating accurately about health risks is an important but difficult part of health promotion, decision support, informed consent, and other health communication activities. Dynamic, game-like graphics that permit user interaction may be an effective way of expressing quantitative risks for health communication. The researchers developed a prototype for a risk communication model, then designed the graphics after feedback from five focus groups. The interactive program was associated with more expressions of emotions by the focus group participants than the other graphics

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and visuals. Participants tended to describe quantitative information as impersonal and irrelevant. Most of them preferred a matrix of stick figures to a bar chart, because it was “clearer that you’re talking about human beings and not statistics.” Most participants also said they enjoyed the interactive aspect of being able to input personal information and get tailored output. The researchers concluded that interactive graphics appear to have potential for expressing risk magnitude as well as the feeling of risk.

Asarnow, J.R., Jaycox, L.H., Tang, L., and others. (2009, September). “Long-term benefits of short-term quality improvement interventions for depressed youths in primary care.” (AHRQ grant HS09908). *The American Journal of Psychiatry* 166(9), pp. 1002-1010.

The researchers evaluated a quality improvement intervention for depressed youths in primary care settings. The participants were 418 youths, 13-21 years of age, with current depressive symptoms. The intervention consisted of expert leader teams to oversee implementation of the intervention, clinical care managers trained in cognitive behavioral therapy for depression to support patient evaluation and treatment, and support for patient and provider choice of treatments. The researchers found that the intervention, relative to usual treatment enhanced by provider training, led to more rapid recovery, with a reduced likelihood of severe depression 6 months after the intervention. Over an 18-month period, they further observed a significant indirect intervention effect on rates of severe depression,

depressive symptoms, and mental-health-related quality of life. The findings suggest an important direction for new research on improving outcomes for youth depression.

Barton, M.B. and Elmore, J.G. (2009). [Editorial] “Pointing the way to informed medical decision making: Test characteristics of clinical breast examination.” *Journal of the National Cancer Institute* 101(18), pp. 1223-1225. Reprints (AHRQ Publication No. 10-R008) are available from AHRQ.*

Clinical breast examinations (CBEs) can detect lesions missed by mammography. Adding CBE to mammography can increase test sensitivity, but the cost of an improvement in sensitivity is a decrease in specificity. This editorial discusses a study in this issue of the journal that used data from the Ontario Breast Screening Program to discuss this cost in terms of the number of false-positive examinations for each additional cancer detected. The study authors found that in a theoretical population of 10,000 women between the ages of 50 and 60, the addition of CBE to mammography would result in the detection of breast cancer in only four additional women. This approach would also lead to false-positive results for an additional 219 women. These data suggest that CBE must be done well if it is to be done at all, with the acknowledgement that overall referrals and false-positive results will increase, note the authors of the editorial. They further conclude that more answers are needed on the role of CBE in breast cancer screening before definitive recommendations for or against its use can be made.

Chen, R.C., Clark, J.A., and Talcott, J.A. (2009, August). “Individualizing quality-of-life outcomes reporting: How localized prostate cancer treatments affect patients with different levels of baseline urinary, bowel, and sexual function.” (AHRQ grant HS08208). *Journal of Clinical Oncology* 27(24), pp. 3916–3922.

Information on a patient’s level of urinary, bowel, or sexual function before treatment for localized prostate cancer (baseline function) may allow for more individualized counseling about the long-term effects on quality of life (QOL) of a particular type of treatment. That’s the conclusion of this study of 409 men treated for localized prostate cancer. It found that different baseline levels of function prior to treatment produced distinct patterns of functional changes at 36 months after treatment. The group studied included 127 patients who underwent radical prostatectomy (RP)—74 who received nerve-sparing surgery and 53 who received non-nerve-sparing surgery, 190 patients who underwent external-beam radiation therapy (EBRT), and 92 patients who underwent brachytherapy (BP). All treatment modalities produced large increases in sexual dysfunction. However, patients with normal sexual function at baseline and who underwent BT seemed to preserve function better than other patients with normal sexual function at baseline. As expected, RP increased urinary incontinence more than EBRT or BT, but patients with intermediate levels of incontinence at baseline showed large improvement in function following BT. Patients with a high level of urinary obstruction or irritation at baseline benefited from treatment,

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particularly when undergoing RP. Patients who underwent either type of radiation therapy (EBRT or BT) exhibited greater loss of bowel function after treatment than patients treated with RP.

Clancy, C.M. (2009, September/October). "New patient safety culture survey helps medical offices assess awareness." *American Journal of Medical Quality* 24(5), pp. 441-443. Reprints (AHRQ Publication No. 10-R001) are available from AHRQ.*

A new survey tool is available for medical offices to help improve clinician and staff awareness of patient safety culture, notes the director of the Agency for Healthcare Research and Quality (AHRQ) in this commentary. A 2004 study of medical errors among family physicians found errors and preventable adverse events in 24 percent of outpatient visits. Harm occurred to patients in 24 percent of the errors and potential harm in an additional 70 percent of the errors. An increase in outpatient treatment for chronic conditions, including cancer chemotherapy, underscores the need for consciousness of patient safety in medical offices, notes the author. The AHRQ Medical Office Survey on Patient Safety Culture, designed for offices with at least three providers, was released in June 2009. This survey parallels the 5-year-old AHRQ Hospital Survey on Patient Safety Culture, which has been used by hundreds of hospitals in the United States. Before being publicly released, the survey was pilot tested in more than 200 medical offices, including primary care, specialty, and multispecialty practices. The major differences between the medical office and

hospital surveys reflect their respective organizational structures.

Clancy, C. (2009, August). "Other voices. Energetic about improving quality." *Hospitals & Health Networks*, pp. 12-13; www.hhnmag.com.

Considerable progress has been made in improving care quality and safety, but much more needs to be done, according to the Director of the Agency for Healthcare Research and Quality (AHRQ). For example, there is not yet a gold standard benchmark for patient harm telling us how we are doing as a nation. AHRQ and the Centers for Medicare and Medicaid Services are working on this problem now and expect to have a kind of gold standard reference developed within the next year. There is already something close to this now for Medicare patients. The proliferation of reporting programs and quality measures ultimately need to converge on at least one core set of measures that all payers and creditors use, notes the author. Reducing potentially avoidable hospital readmissions is also a challenge. Patients in vulnerable populations and subgroups tend to be underrepresented in clinical studies that assess efficacy. Addressing this challenge is important given the emerging majorities in this country. Finally, comparative effectiveness and health IT are essential counterparts to go with all of the advances in biomedicine in recent decades.

Clancy, C. (2009, August). "Quality in the OR: The new AHRQ reports." *AORN Journal* 90(2), pp. 269-271. Reprints (AHRQ Publication No. 10-R005) are available from AHRQ.*

Keeping patients safe in the operating room (OR) may be the perioperative nurse's highest

calling. It cannot hearten perioperative nurses to learn that U.S. health care quality continues to lag and that patient safety problems actually are getting worse, according to the Director of the Agency for Healthcare Research and Quality (AHRQ).

The Agency's 2008 *National Healthcare Disparities Report* and *National Healthcare Quality Report* document that health care quality remains suboptimal and continues to improve at a slow pace, while disparities persist in quality and access. Certain measures demand our attention, notes the author. These include: appropriate timing of antibiotics, the rate of accidental puncture or laceration during a procedure, postoperative pneumonia or a thrombotic event, and postoperative abdominal wound separation. We are engaged in a multi-front national effort to improve on some of these measures. A significant investment in quality improvement is being made through the American Reinvestment and Recovery Act of 2009. As nurses know, quality improvement will be real and sustained when they are empowered to apply the knowledge they already have at every opportunity.

Haggerty, C.L., Totten, P.A., Ferris, M., and others. (2009). "Clinical characteristics of bacterial vaginosis among women testing positive for fastidious bacteria." (AHRQ grant HS08358). *Sexually Transmitted Infections* 85, pp. 242-248.

Bacterial vaginosis (BV) is a common lower genital tract infection that may lead to pelvic inflammatory disease (PID) and other conditions. Although no single agent is known to cause BV and its etiology is not well

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understood, various bacteria such as *Gardnerella vaginalis*, ureaplasmas, *Mycoplasma hominis*, and anaerobic bacteria are commonly isolated from BV patients. The researchers sought to determine the associations among various fastidious pathogens and BV defined by Gram stain and Amsel's criteria among a population of women with PID. Their analysis was conducted using stored specimens from 50 randomly selected women with histologically confirmed non-gonococcal, non-chlamydial endometritis. The researchers concluded that *L. sanguinegens/amnionii*, *A. vaginae*, and BV-associated bacteria 1 are associated with BV defined by Gram stain and Amsel's criteria among women with histologically confirmed PID. Consistent results using varying BV definitions suggest robust findings.

Haukoss, J.S., Hopkins, E., Byyny, R.L., and others. (2009). "Design and implementation of a controlled clinical trial to evaluate the effectiveness and efficiency of routine opt-out rapid human immunodeficiency virus screening in the emergency department. (AHRQ grant HS17526). *Academic Emergency Medicine* 16, pp. 800-808.

In 2006, the Centers for Disease Control and Prevention published revised recommendations for performing nontargeted rapid HIV testing in health care settings, including emergency departments (EDs). Limited research has been performed to define the most effective approach to performing HIV testing in EDs. The researchers designed this study to evaluate the clinical effectiveness, clinical efficiency, cost effectiveness, and patient and staff acceptance of

performing nontargeted opt-out rapid HIV screening when compared to physician-directed diagnostic testing in the ED of a large, urban teaching hospital. The article provides a conceptual framework for health services researchers and the broader public health community for the performance of comparative effectiveness research in EDs. It describes the design and implementation of a large prospective controlled clinical trial and three nested observational studies. Due to the unique scope of the article, and because it was written prior to the conclusion of the study, no results are provided.

Kennedy, K.M., Rodriguez, K.M., Head, D., and others. (2009, July). "Neuroanatomical and cognitive mediators of age-related differences in perceptual priming and learning." (AHRQ grant HS13819). *Neuropsychology* 23(4), pp. 475-491.

Identification of a word or object (perceptual identification) is a skill that can be acquired by people of all ages. However, it is unclear whether older observers improve at the same rate as their younger counterparts. The authors of this study examined the effects of age-related differences in brain structure and cognitive resources on perceptual priming and perceptual skill acquisition. They chose a fragmented picture identification task to gauge simultaneously the age, neural, and cognitive effects on both perceptual repetition priming and perceptual learning in the same task. They assessed the working memory and fluid intelligence of 169 healthy adults (ages 18-80) and, using MRI scans, measured brain volumes of regions that were deemed relevant to those cognitive skills. The results of the study indicate that, although neither item-specific repetition priming nor

more general skill learning of fragmented pictures identification are immune to aging, age effects on performance are largely mediated by multiple and dissociable neuroanatomical and cognitive factors.

Lanham, H.J., McDaniel, R.R., Crabtree, B.F., and others. (2009, September). "How improving practice relationships among clinicians and nonclinicians can improve quality in primary care." (AHRQ grant HS08776). *The Joint Commission Journal on Quality and Patient Safety* 35(9), pp. 457-466.

The researchers used data from four large National Institutes of Health-funded studies, an iterative analytic strategy, and a grounded theory approach to understanding the characteristics of relationships within primary care practices. The broad range of data included direct observation of practices during work activities and patient-client interactions, in-depth interviews with physicians and other key staff members, surveys, structured checklists of office environments, and chart reviews. Analyses focused on characteristics of practice relationships that exhibited a range of success in achieving practice improvement. The analyses were based on complex adaptive systems theory, which emphasizes the role of interdependencies in system outcomes. The seven characteristics identified as important in practice improvement were trust, mindfulness, heedfulness, respectful interaction, diversity, social/task relatedness, and rich/lean communication. The researchers developed a model depicting the relationship between these seven characteristics of practice relationships and other

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factors such as reflection, sensemaking and learning, and practice outcomes.

Lo Re, V., Haynes, K., Forde, K.A., and others. (2009). "Validity of The Health Improvement Network (THIN) for epidemiologic studies of hepatitis C virus infection." (AHRQ grant HS10694). *Pharmacoepidemiology and Drug Safety* 18, pp. 807-814.

Methods need to be developed to identify, correctly classify, and follow for extended periods of time large numbers of patients infected with hepatitis C virus (HCV). The Health Improvement Network (THIN) may fill this need. THIN is a primary care medical records database in the United Kingdom that contains electronic medical records of over 1,500 general practitioners. Before THIN can be used for epidemiologic research, the validity of the diagnosis of HCV infection in the database must be determined. The researchers sought to determine the accuracy of THIN's HCV diagnostic codes compared to general practitioner confirmation of documented diagnosis. After identifying 150 patients in the THIN database with initial diagnosis codes for HCV infection and nonspecific viral hepatitis, the researchers surveyed physicians in the database. They found that the HCV-specific diagnostic codes in the THIN were highly predictive of HCV infection. Also, manual review of THIN's records reduced misclassification of HCV infection as viral hepatitis (not otherwise specified).

Maro, J.C., Platt, R., Holmes, J.H., and others. (2009, September). "Design of a

national distributed health data network." (AHRQ Contract No. 290-05-0033). Pace, W.D., Cifuentes, M., Valuck, R.J., and others. "An electronic practice-based network for observational comparative effectiveness research." (AHRQ Contract No. 290-05-0033) *Annals of Internal Medicine* 151(5), pp. 341-344 and 338-340.

These two articles describe, respectively, the general design of a national distributed health data network and the construction and initial use of a smaller geographically distributed data network for comparative effectiveness research. In the first paper, the general structure of a national distributed health data network is discussed. This network would support both observational and interventional studies, but permit the local data holders to maintain control over access to and use of data from their local database of electronic health records. Relevant data for a study would be shared, while retaining protected health information locally. The authors discuss policy issues, including the funding necessary for a truly national network, and the usefulness of this proposed network to multiple Federal agencies. The second paper describes the Distributed Ambulatory Research in Therapeutics Network (DARTnet), which connects eight geographically and organizationally distinct databases of electronic health records (EHRs) representing more than 500 clinicians and more than 400,000 patients. The network allows researchers to query the federated databases to obtain information for use in studies related to comparative effectiveness of prescription drugs and medical devices. Rather than being a one-

way transfer of standardized information from the federated databases, DARTnet can prompt clinicians to obtain specific clinical information during a patient encounter. This gives the researchers the ability to combine the elements of observational research and those of a clinical trial.

Plantinga, L.C., Fink, N.E., Finkelstein, F.O., and others. (2009). "Association of peritoneal dialysis clinic size with clinical outcomes." (AHRQ grant HS08365). *Peritoneal Dialysis International* 29, pp. 285-291.

Few studies have examined the relationship between peritoneal dialysis (PD) clinic size and outcomes in patients who are well characterized with respect not only to demographics but also to comorbid disease status and other clinical and laboratory characteristics. Using a national prospective cohort study, the researchers examined whether being treated at a larger PD clinic was associated with better patient outcomes, including fewer switches to hemodialysis (HD), fewer cardiovascular (CV) events, lower CV mortality, and lower all-cause mortality. Their study included 236 PD patients, who were treated at 26 outpatient dialysis clinics in 13 States throughout the United States. The researchers found that PD patients treated at clinics with more than 50 patients were at lower risk of switching to HD and at lower risk of CV events. This was true regardless of adjustments for demographic factors, other illnesses, body size, albumin and creatinine levels, and clinic years of operation. There was no association of PD clinic size with CV mortality or all-cause mortality.

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Sittig, D.F. and Singh, H. (2009, September 9). “Eight rights of safe electronic health record use.” (AHRQ grant HS017820). *Journal of the American Medical Association* 302(10), pp. 1111-1113.

To avoid medical errors resulting from electronic health records (EHR) use and to achieve the promise of EHRs, the authors propose eight rights of safe EHR use. EHR hardware and software must be adequately sized, configured, and maintained. Content must be evidence-based, carefully constructed, monitored, complete, and error-free. The user interface should present all the relevant patient data in a format allowing clinicians to rapidly perceive problems, formulate responses, and document their actions. Trained and knowledgeable personnel are essential for safe use as are software designers, developers, trainers, and implementation and maintenance staff. Clinical decision support interventions should be streamlined with clinicians’ electronically enabled workflow through a standard set of functions. A culture of innovation, exploration, and continual improvement are key organizational factors for safe EHR use. State and Federal rules, regulations, and policies must address the safety and effectiveness of health information exchange across organizational boundaries. Finally, organizations must continually evaluate the usability and performance of their systems after implementation, reliably measure benefits, and assess potential iatrogenic effects.

Tan, C., Hsia, R., Shou, H., and others. (2009, August). “Chlamydia trachomatis-infected

patients display variable antibody profiles against the nine-member polymorphic membrane protein family.” (AHRQ grant HS08358). *Infection and Immunity* 77(8), pp. 3218-3226.

Chlamydia trachomatis, a prevalent human pathogen, infects the ocular and genital mucosa. The complete sequence analysis of the *C. trachomatis* genome has revealed a multigene family encoding nine predicted polymorphic membrane proteins (Pmps). The researchers tested the hypothesis that the Pmp gene repertoire is the basis of a previously undetected mechanism of antigenic variation by examining variations in the Pmp-specific antibody response in different patient populations with confirmed *C. trachomatis* genital infection. The researchers found varied anti-Pmp antibody profiles in patients from four geographically distinct *C. trachomatis*-infected populations. They also demonstrated Pmp subtype-specific and gender-specific antibody responses. These observations imply variable expression of the Pmp gene family during infection, suggesting that the *C. trachomatis* Pmp gene family is the basis of a mechanism of antigenic variation for the purpose of immune evasion.

Weiner, M.G. and Embi, P.J. (2009, September). “[Editorial] Toward reuse of clinical data for research and quality improvement: The end of the beginning?” (AHRQ grant HS17099). *Annals of Internal Medicine* 151(5), pp. 359-360.

The authors of this editorial discuss the current status of health information technology (health IT) as a source of data for health care research. They observe that social and organizational challenges have

been more important than technological issues in the success and failure of health IT initiatives. Similarly, adequate funding cannot ensure success of regional health IT organizations without effective governance structures. Advances in data capture, the speed and standardization of data transfer between systems, and the ability to draw on data from multiple sources has reduced researchers’ reliance on administrative and billing data. However, achieving interoperability between data systems and ensuring adherence to common data standards will be necessary to make research uses of clinical data collected for patient records successful, the authors note. They conclude that current technology and successful models of distributed data systems suggest that we are closer to achieving the promise of health IT for research.

Winthrop, K.L. and Chiller T. (2009, June). “[Perspectives] Preventing and treating biologic-associated opportunistic infections.” (AHRQ grant HS17552). *Nature Reviews: Rheumatology* 5, pp. 405-410.

A group of new drugs for the treatment of rheumatoid arthritis and other autoimmune diseases act by inhibiting tumor necrosis factor (TNF), a critical factor in the functioning of the immune system. While these FDA-approved drugs (infliximab, etanercept, adalimumab, and certolizumab) have exhibited great clinical efficacy against autoimmune diseases, their action in suppressing TNF places the patient at higher risk of developing a wide variety of bacterial, fungal, parasitic, and mycobacterial infections. The authors discuss the importance of testing patients for latent tuberculosis infection, infection

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with nontuberculous mycobacteria, endemic fungal diseases such as histoplasmosis, and diseases caused by intracellular bacterial pathogens such as *Listeria monocytogenes* or *Salmonella*. For latent tuberculosis infection, the authors recommend using interferon gamma release assays in patients who are likely to give a positive tuberculin skin test because of childhood vaccination. They suggest courses of treatment for patients found to have latent or active tuberculosis infections to allow them to begin anti-TNF therapy. The authors also suggest approaches for dealing with fungal infections and intracellular bacterial infections in patients given anti-TNF agents. Finally, they recommend postmarketing vigilance for any new anti-TNF

biologics that come into clinical use.

Yawn, B.P., Graham, D.G., Bertram, S.L., and others. (2009). "Practice-based research network studies and institutional review boards: Two new issues." (AHRQ grant HS14744). *Journal of the American Board of Family Medicine* 22, pp. 453-460.

Investigators of practice-based research network (PBRN) studies must interact with a number of Institutional Review Boards (IRBs), many of which are not familiar with PBRN research. The authors discuss two issues involving IRBs that arose during the second and third year of a 5-year PBRN study on postpartum depression. The study included 32 sites in 20 different States. The first issue was related to the use of site-specific

and dated approval stamps for patient consent forms. This led to the need to obtain multiple patient consent forms for the same study and consequent delays. The second issue related to the retraining of local practice staff about working with human subjects, which many IRBs required to be performed either yearly or every two years. Eight of the 19 IRBs repeated the retraining course with exactly the same course materials as before. This resulted in approximately 200 hours of unreimbursed physician and nursing staff time. The authors believe that the cost of implementing such requirements, which lack evidence supporting their usefulness, must be balanced against the potential for improving human subject protection. ■

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